

Auroras were most frequent in: Wisconsin, on eighteen days; Minnesota, on fourteen days; North Dakota, on ten days.

#### CANADIAN DATA—THUNDERSTORMS AND AURORAS.

Thunderstorms were reported at Port Stanley, 24th, 25th, and 31st, and at Medicine Hat, 28th.

Auroras were reported as follows: 1st, Winnipeg, Minnedosa, and Prince Albert. 3d, White River, Winnipeg, and Minnedosa. 11th, Prince Albert. 12th, Minnedosa and Prince Albert. 13th, Quebec, Minnedosa, and Medicine Hat. 14th, St. Andrews, Father Point, Quebec, Kingston, Rockcliffe, Port Stanley, Winnipeg, Minnedosa, Qu'Appelle, Medicine Hat, and Prince Albert. 15th, Father Point, Quebec, Rock-

cliffe, Winnipeg, and Minnedosa. 16th, Father Point, Quebec, Rockcliffe, Kingston, Port Arthur, Winnipeg, Minnedosa, Qu'Appelle, Medicine Hat, and Prince Albert. 17th, Father Point, White River, Port Arthur, and Medicine Hat. 18th, Kingston, Winnipeg, and Minnedosa. 20th, St. Andrews, Father Point, and Quebec. 21st, White River. 22d, Grand Manan, St. Andrews, Father Point, Montreal, Kingston, and Minnedosa. 23d, Father Point and White River. 24th, Father Point, Winnipeg, and Minnedosa. 25th, White River and Minnedosa. 26th, Winnipeg and Minnedosa. 28th, White River. 29th, Quebec and Medicine Hat. 30th, St. Andrews, Quebec, and Medicine Hat. 31st, Winnipeg and Battleford.

### METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For general remarks relative to this subject see page 7 of the REVIEW for January, 1895.

The comparison of the air temperature with magnetic horizontal force is shown in detail on Chart V, and the special features of the March curves are as follows:

#### SPECIAL FEATURES OF THE MARCH CURVES.

The temperatures and also the magnetic force observations need no correction for slope; the amplitudes are not modified; the reduction to a zero datum line for temperatures is

+2 and for the horizontal magnetic force is -2. The new magnetic solar period begins March 11.80. If the more accurate period, 26.67928, is used instead of 26.68 days, for which the published ephemeris was constructed, the correction from the latter to the former for the year 1895 is 0.08 day.

Unfortunately for the purposes of this comparison the magnetic observatory at San Antonio suspended its operations about the first of March. We can therefore utilize only the readings of the instruments at Toronto and Washington.

### INLAND NAVIGATION.

The extreme and average stages of water in the rivers during the current month are given in Table VII. The only river that was above the danger line was the Tennessee, at Johnsonville, on the 23d. The following rivers rose to nearly that point: the Ohio, at Evansville, 23d; the Congaree, at Columbia, 16th, and the Savannah, at Augusta, 17th.

The thickness of ice in rivers and harbors is given in the weekly bulletin of "Snow on the Ground" during the winter

months. On Monday, March 25, the Missouri river was open for some distance above Pierre, but above that there was reported 26 inches of ice at Bismarck and 33 inches at Williston. The Ohio was just clearing out at Pittsburg. At the Lake stations the reports showed 24 inches in the harbor and 12 in the lake at Duluth; none at Marquette; 22 at Sault Ste. Marie, and no fast ice at Milwaukee and Grand Haven; Alpena, 0.5; Port Huron, 5.0; Detroit, 6; Erie, 3; Rochester, 14; Oswego, 16.5.

### STATE WEATHER SERVICES.

The following extracts are taken from the reviews published by the services of the respective States; occasional notes in brackets are added by the Editor:

*Alabama.*—Up to the 20th the month was cold and generally unfavorable; severe local windstorms occurred in different parts of the State on the 7th and again on the 20th; the heavy rains of the middle of the month caused very high rivers, amounting almost to floods in some places. The last ten days were generally warm and pleasant and favorable to all farm work, which has been pushed very rapidly. Rainfall was 1.83 more than the normal for the month.

*Arizona.*—The monthly mean temperature was 1.5° above normal; the precipitation was 1 inch below normal; the average weather was 18 clear days, 8 partly cloudy, 5 cloudy, and 1 rainy.

*Arkansas.*—The mean temperature for the month was 0.6° above the normal. For the first two decades the temperature was generally below the normal; after the 21st it was above the normal to the end of the month. The highest temperature ever recorded in the State in March occurred at Keesees Ferry, Marion County, on the 28th, when the maximum thermometer registered 91°. The average precipitation for the State was 0.41 inch above the normal. There was no snowfall during the month, except traces at Corning, Fayetteville, and Keesees Ferry.

*California.*—The month was deficient in both temperature and rainfall. The severe frosts of 14th, 15th, 29th, and 30th did considerable damage to the almonds, the early cherries, and especially to the apricots, which will considerably decrease the yield. Several fine orchards that had escaped the frost of the 14th and 15th were nearly destroyed by the frost of the 29th. All other fruits will be abundant.

The grain prospects continue good in all quarters of the State where raised. The abnormal weather of February had advanced the growth of fruits at least ten days earlier than usual, which was the cause of the damage done by this month's frosts.

*Colorado.*—The monthly mean temperature was 1°, and the average daily temperature from 5° to 7° below the normal for March. Precipitation was most general from 13th to the 15th, and on the 29th, 30th, and 31st. It was above the average in the north-central section and on the Divide, while in the San Luis Valley there was little or none, and a deficiency was also reported from the extreme eastern and southern countries and the western slope.

*Connecticut.*—(See *New England*.)

*Delaware.*—(See *Maryland*.)

*District of Columbia.*—(See *Maryland*.)

*Florida.*—There was no marked departure from normal conditions during the month. A moderate cold wave occurred in the first week, but only two stations reported temperatures below the freezing point and very little damage was done to vegetation. A cool wave in the third week of the month was accompanied by light frosts in some of the northern counties, but no injury resulted except the retarding effect on vegetable growth. The mean precipitation for the month was 0.84 inch below the normal for the State.

*Georgia.*—The month was marked by no unusual severe storms. The State was visited by several cold waves, the most noticeable of which took effect on the mornings of the 16th and 17th, and on the latter date caused the temperature to fall below or near freezing in the most southerly counties. The average temperature of the month for the State as a whole varied but little from the seasonal normal. The precipitation was less than a half inch below the normal.